

REMARKS

Claims 1-20 are pending in this application, of which claims 1-2 and 4-9 have been amended. No new claims have been added.

The Examiner has maintained from the previous Office Action the 35 USC §103(a) rejection of claim 1 as unpatentable over “Transcritical CO₂ Cycle Technology” 2002 SAE Automotive Alternate Refrigerant Systems Symposium, July 2002, pages 1-17 by Joo Seok Baek, et al. (hereinafter “Baek et al.”) in view of U.S. Patent 4,739,628 to Shoemaker (hereinafter “Shoemaker et al.”).

Applicants respectfully traverse this rejection.

As noted in Applicants response of August 11, 2004, the Figure on page 12 of Baek et al. discloses a CO₂ cycle “expansion device with output work” (“ED-WOW”) including a gas cooler, a compressor, a regenerator, an evaporator and an accumulator. An auxiliary compressor, as recited in claim 1 of the instant application, is not shown.

Shoemaker et al. discloses a non-CO₂ heat pump having a single four-way valve.

The Examiner has noted that column 5, lines 18-19 of Shoemaker et al. disclose that if more compressors are included, more selection valves will be required. Even admitting this fact, the combination of Baek et al. and Shoemaker et al. fails to teach, mention or suggest at least three four-way valves for connecting various devices (Please note that the expander of the instant application is not the same as the “additional compressors” contemplated in Shoemaker et al.) such that, when able three valves are switched over, the refrigerant reverses flow direction

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between the compressor and auxiliary compressor, as in the present invention. The required minimum of three valves 2, 4, 9 are shown in Fig. 1 of the instant application.

Accordingly, claim 1 has been amended to clarify the minimum of three four-way valves required in the present invention.

Thus, the 35 USC §103(a) rejection should be withdrawn.

The Examiner has allowed claims 10-20 and has indicated that claims 2-9 would be allowable if rewritten in independent form.

Accordingly, claims 2 and 4-9 have been so amended.

In view of the aforementioned amendments and accompanying remarks, claims 1-20, as amended, are in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

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In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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Enclosures: Amendment Transmittal

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